# Test Report
## Quality of Bitumen

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. S.K. CHANDRA |
| **Test Method** | IS : 73 – 1992 & Specification for Road & Bridge Works, MORT&H, |
| **Grade of Bitumen** | 60 / 70 |
| **Location** | Hot Mix Plant |
| **Material** | Bitumen |
| **Sample No** | 1 |
| **Date** | 14-May-2018 |

| Sl. No. | Description | Test Results | Requirement as per IS:73 - 1992 |
|---|---|---|---|
| 1 | Penetration at $25^0$C , 1 / 10 mm | 64 | 60 – 70 |
| 2 | Softening Point, ($^0$C) | 52 | 45 – 55 |
| 3 | Specific Gravity | 1.1 | Min. 0.97 |
| 4 | Ductility at $27^0$C, in cm | 81 | Min. 75 |
| 5 | Flash Point, ($^0$C) | 183 | Min. 175 |

**Note:**

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**For Mecadez Core Technologies Private Limited**

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Asst. Executive Engineer
Project Division
Yelahanka Zone
Bangalore

# Test Report
## Quality of Bitumen

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. S.K. CHANDRA |
| **Test Method** | IS : 73 – 1992 & Specification for Road & Bridge Works, MORT&H, |
| **Grade of Bitumen** | 60 / 70 |
| **Location** | Hot Mix Plant |
| **Material** | Bitumen |
| **Sample No** | 2 |
| **Date** | 16-May-2018 |

| Sl. No. | Description | Test Results | Requirement as per IS:73 - 1992 |
|---|---|---|---|
| 1 | Penetration at $25^0$C , 1 / 10 mm | 66 | 60 – 70 |
| 2 | Softening Point, ($^0$C) | 53 | 45 – 55 |
| 3 | Specific Gravity | 1.1 | Min. 0.97 |
| 4 | Ductility at $27^0$C, in cm | 79 | Min. 75 |
| 5 | Flash Point, ($^0$C) | 181 | Min. 175 |

**Note:**

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Asst. Executive Engineer
Project Division
Yelahanka Zone
Bangalore

# Test Report
## Rate of Spread of Tack Coat

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri S K Chandra |
| **Location** | At Site |
| **Material** | Bitumen |
| **Sample No** | 1 |
| **Date** | 19-May-2018 |

| Sl. No. | Determination | Unit | Test No 1 Longitudinal Distribution | | |
|---|---|---|---|---|---|
| 1 | Size of Plate (mxn) | $m^2$ | 0.2x0.2 | 0.2x0.2 | 0.2x0.2 |
| 2 | Area of the Plate (a) | $m^2$ | 0.04 | 0.04 | 0.04 |
| 3 | Initial weight of the empty Plate (b) | kg | 1.641 | 1.641 | 1.641 |
| 4 | Final weight of plate after application of Tack Coat (c) | kg | 1.653 | 1.652 | 1.654 |
| 5 | Weight of Prime coat/ Tack Coat (d = c-b ) | kg | 0.012 | 0.011 | 0.013 |
| 6 | Rate of spread (d/a) | kg / $m^2$ | 0.300 | 0.275 | 0.325 |
| 7 | Average | kg / $m^2$ | 0.300 | | |
| 8 | Specified Limit | kg / $m^2$ | Not less than 0.25 kg / $m^2$ | | |

**Results:** Rate of Spread of Prime Coat / Tack Coat is: 0.300 kg / m2

**Note:**

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Project Division
Yelahanka Zone
Bangalore

# Test Report
## Rate of Spread of Tack Coat

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri S K Chandra |
| **Location** | At Site |
| **Material** | Bitumen |
| **Sample No** | 2 |
| **Date** | 19-May-2018 |

| Sl. No. | Determination | Unit | Test No 1 Longitudinal Distribution | | |
|---|---|---|---|---|---|
| 1 | Size of Plate (mxn) | $m^2$ | 0.2x0.2 | 0.2x0.2 | 0.2x0.2 |
| 2 | Area of the Plate (a) | $m^2$ | 0.04 | 0.04 | 0.04 |
| 3 | Initial weight of the empty Plate (b) | kg | 1.641 | 1.641 | 1.641 |
| 4 | Final weight of plate after application of Tack Coat (c) | kg | 1.652 | 1.651 | 1.653 |
| 5 | Weight of Prime coat/ Tack Coat (d = c-b ) | kg | 0.011 | 0.01 | 0.012 |
| 6 | Rate of spread (d/a) | kg / $m^2$ | 0.275 | 0.25 | 0.3 |
| 7 | Average | kg / $m^2$ | 0.275 | | |
| 8 | Specified Limit | kg / $m^2$ | Not less than 0.25 kg / $m^2$ | | |

**Results:** Rate of Spread of Prime Coat / Tack Coat is: 0.275 kg / m2

**Note:**

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Yelahanka Zone
Bangalore

# Test Report
## Rate of Spread of Tack Coat

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri S K Chandra |
| **Location** | At Site |
| **Material** | Bitumen |
| **Sample No** | 3 |
| **Date** | 19-May-2018 |

| Sl. No. | Determination | Unit | Test No 1 Longitudinal Distribution | | |
|---|---|---|---|---|---|
| 1 | Size of Plate (mxn) | $m^2$ | 0.2x0.2 | 0.2x0.2 | 0.2x0.2 |
| 2 | Area of the Plate (a) | $m^2$ | 0.04 | 0.04 | 0.04 |
| 3 | Initial weight of the empty Plate (b) | kg | 1.641 | 1.641 | 1.641 |
| 4 | Final weight of plate after application of Tack Coat (c) | kg | 1.652 | 1.652 | 1.654 |
| 5 | Weight of Prime coat/ Tack Coat (d = c-b ) | kg | 0.011 | 0.011 | 0.013 |
| 6 | Rate of spread (d/a) | kg / $m^2$ | 0.275 | 0.275 | 0.325 |
| 7 | Average | kg / $m^2$ | 0.308 | | |
| 8 | Specified Limit | kg / $m^2$ | Not less than 0.25 kg / $m^2$ | | |

**Results:** Rate of Spread of Prime Coat / Tack Coat is: 0.308 kg / m2

**Note:**

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Bangalore

# Test Report
## Rate of Spread of Tack Coat

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri S K Chandra |
| **Location** | At Site |
| **Material** | Bitumen |
| **Sample No** | 4 |
| **Date** | 21-May-2018 |

| Sl. No. | Determination | Unit | Test No 1 Longitudinal Distribution | | |
|---|---|---|---|---|---|
| 1 | Size of Plate (mxn) | $m^2$ | 0.2x0.2 | 0.2x0.2 | 0.2x0.2 |
| 2 | Area of the Plate (a) | $m^2$ | 0.04 | 0.04 | 0.04 |
| 3 | Initial weight of the empty Plate (b) | kg | 1.641 | 1.641 | 1.641 |
| 4 | Final weight of plate after application of Tack Coat (c) | kg | 1.653 | 1.652 | 1.652 |
| 5 | Weight of Prime coat/ Tack Coat (d = c-b ) | kg | 0.012 | 0.011 | 0.011 |
| 6 | Rate of spread (d/a) | kg / $m^2$ | 0.300 | 0.275 | 0.275 |
| 7 | Average | kg / $m^2$ | 0.283 | | |
| 8 | Specified Limit | kg / $m^2$ | Not less than 0.25 kg / $m^2$ | | |

**Results:** Rate of Spread of Prime Coat / Tack Coat is: 0.283 kg / m2

**Note:**

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Bangalore

# Test Report
## Rate of Spread of Tack Coat

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri S K Chandra |
| **Location** | At Site |
| **Material** | Bitumen |
| **Sample No** | 5 |
| **Date** | 21-May-2018 |

| Sl. No. | Determination | Unit | Test No 1 Longitudinal Distribution | | |
|---|---|---|---|---|---|
| 1 | Size of Plate (mxn) | $m^2$ | 0.2x0.2 | 0.2x0.2 | 0.2x0.2 |
| 2 | Area of the Plate (a) | $m^2$ | 0.04 | 0.04 | 0.04 |
| 3 | Initial weight of the empty Plate (b) | kg | 1.641 | 1.641 | 1.641 |
| 4 | Final weight of plate after application of Tack Coat (c) | kg | 1.651 | 1.654 | 1.656 |
| 5 | Weight of Prime coat/ Tack Coat (d = c-b ) | kg | 0.01 | 0.013 | 0.015 |
| 6 | Rate of spread (d/a) | kg / $m^2$ | 0.250 | 0.325 | 0.375 |
| 7 | Average | kg / $m^2$ | 0.317 | | |
| 8 | Specified Limit | kg / $m^2$ | Not less than 0.25 kg / $m^2$ | | |

**Results:** Rate of Spread of Prime Coat / Tack Coat is: 0.317 kg / m2

**Note:**

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Bangalore

# Test Report
## Rate of Spread of Tack Coat

**Project Name**: 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division

**Client**: Executive Engineer Project Division Yelahanka Zone
**Job No**: MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2
**Mix Type**: Bituminous Concrete (BC)
**Contractor**: Sri S K Chandra
**Location**: At Site
**Material**: Bitumen
**Sample No**: 6
**Date**: 21-May-2018

| Sl. No. | Determination | Unit | Test No 1 Longitudinal Distribution | | |
|---|---|---|---|---|---|
| 1 | Size of Plate (mxn) | $m^2$ | 0.2x0.2 | 0.2x0.2 | 0.2x0.2 |
| 2 | Area of the Plate (a) | $m^2$ | 0.04 | 0.04 | 0.04 |
| 3 | Initial weight of the empty Plate (b) | kg | 1.641 | 1.641 | 1.641 |
| 4 | Final weight of plate after application of Tack Coat (c) | kg | 1.654 | 1.653 | 1.651 |
| 5 | Weight of Prime coat/ Tack Coat (d = c-b ) | kg | 0.013 | 0.012 | 0.01 |
| 6 | Rate of spread (d/a) | kg / $m^2$ | 0.325 | 0.3 | 0.25 |
| 7 | Average | kg / $m^2$ | | 0.292 | |
| 8 | Specified Limit | kg / $m^2$ | Not less than 0.25 kg / $m^2$ | | |

**Results:** Rate of Spread of Prime Coat / Tack Coat is: 0.292 kg / m2

**Note:**

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# Test Report
## Aggregate Impact Value

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. S.K. CHANDRA |
| **Test Method** | IS : 2386 (Part - 4) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V. |
| **Location** | At Site |
| **Material** | Coarse Aggregate |
| **Sample No** | 1 |
| **Date** | 16-May-2018 |

| Sl. No. | Determination | Unit | Trails | |
|---|---|---|---|---|
| 1 | Weight of empty cylinder, w1 | gm | 960 | 960 |
| 2 | Weight of container filled with Aggregate, w2 | gm | 1309 | 1308 |
| 3 | Weight of the Aggregate before compaction, (w2 - w1) = w3 | gm | 349 | 348 |
| 4 | Weight of the sample passing through 2.36 mm IS sieves after Impact, w4 | gm | 82 | 84 |
| 5 | Weight of the sample retained on 2.36 mm IS sieve after Impact, w5 | gm | 267 | 264 |
| 6 | Aggregate Impact Value (w4 / w3 )x100 | % | 23.50 | 24.14 |
| 7 | Specified Limit | % | 24 | |

**Results:** Average Aggregate Impact Value: **23.82** %

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# Test Report
## Aggregate Particle Shape

| | |
|---|---|
| **Project Name** | 1. Improvement of drain at thirumenahalli village main road in ward no 05 byatarayanapura sub division.2) Improvement of road and drain at thirumenahalli junction to agrahara layout govt hospital in ward no05 byatarayanapura sub division 3)Improvement of roads and drain at chokkanahalli village main road cross road in ward no 05 byatarayanapura sub division 4) Improvement of roads and drain at markendeyanagara main road and cross roads in ward no 05 byatarayanapura sub division 5) Improvement of roads and drain at sriraj layout main road and cross road in ward no 05 byatarayanapura sub division 6) Improvement of roads and drain at kogilu surrounding in ward no 05 byatarayanapura sub division 7)Improvement of roads and drain at agrahara village cross roads in ward no 05 byatarayanapura sub division 8) Improvement of roads and drain at agrahara layout kallappa reddy main road in ward no 05 byatarayanapura sub division |
| **Client** | Executive Engineer Project Division Yelahanka Zone |
| **Job No** | MCTPL/BBMP/Project Division Yelahanka Zone /PMC/2017-2018/QR/P-9/2 |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. S.K. CHANDRA |
| **Test Method** | IS : 2386 (Part - 1) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V. |
| **Location** | Hot Mix Plant |
| **Material** | Coarse Aggregates |
| **Sample No** | 1 |
| **Date** | 16-May-2018 |

| I.S. Sieves Size | | Weight of Retained Sample on Each Sieve (minimum 200 Pieces) (gm) | Flakiness Index | | Elongation Index | |
|---|---|---|---|---|---|---|
| Passing through IS Sieves (mm) | Retained on IS Sieves (mm) | | Thickness Gauge | Weight of Aggregates in each fraction passing on thickness gauges (gm) | Length Gauge | Weight of Aggregates in Fraction retained on length gauges (gm) |
| 63 | 50 | 0 | 33.9 | 0 | - | 0 |
| 50 | 40 | 0 | 27 | 0 | 81 | 0 |
| 40 | 25 | 0 | 19.5 | 0 | 58.5 | 0 |
| 31.5 | 25 | 0 | 16.95 | 0 | - | 0 |
| 25 | 20 | 1558 | 13.5 | 238 | 40.5 | 256 |
| 20 | 16 | 1442 | 10.8 | 121 | 32.4 | 148 |
| 16 | 12.5 | 957 | 8.55 | 152 | 25.6 | 159 |
| 12.5 | 10 | 465 | 6.75 | 67 | 20.2 | 73 |
| 10 | 6.3 | 234 | 4.89 | 56 | 14.7 | 63 |
| | SW | 4656 | SWf | 634 | SWe | 699 |

**Flakiness Index** 13.62 %
**Elongation Index** 15.01 %
**Combined Flakiness and Elongation Indices :** 28.63 %

**Comments:** Maximum allowable Combined Flakiness and Elongation Indices for Bituminous Concrete is 35%.

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